IATF Technology Deployment Working Group

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Federal Opportunities to Leverage the Commercial Building Energy Alliance

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Commercial Building Energy Alliance

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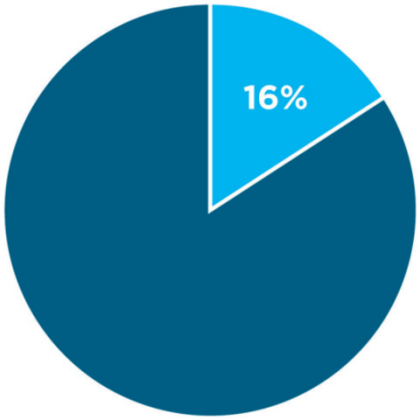
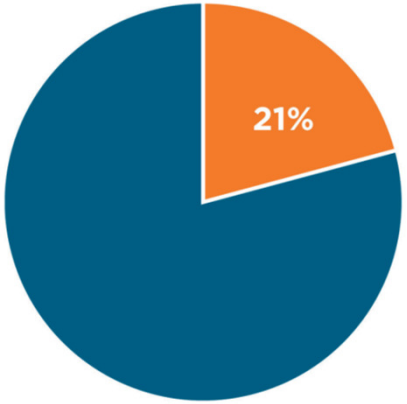
***Building owners and operators**, efficiency organizations and DOE target common energy efficiency challenges and opportunities*

Retail and Food Service



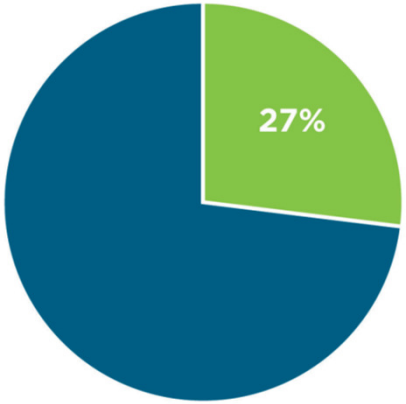
- 55 members
- 2.2+ billion ft^2

Commercial Real Estate and Hospitality



- 95 members
- 5.3+ billion ft^2

Hospitals



- 51 members
- 0.5+ billion ft^2

Strength in numbers → Higher Ed sector added in 2011; new members join regularly

www.commercialbuildings.energy.gov/alliances

Approx. market % from member reported ft^2 data and CBECS 2003 baselines

Targeted Efficiency Projects Relevant for Private and Public Sector Applications

Teams of CBEA member experts (e.g. director of lighting design) and DOE technical support identify and pursue major efficiency opportunities:

- Lighting and Electrical Team
- Refrigeration and Food Service Team
- Space Conditioning Team
- Plug and Process Loads (a.k.a. MELs) Team
- Market Transformation Team

Results from Team projects are implemented by members and results shared with the broader commercial buildings sector:

- **Tools** such as life cycle cost calculators, interactive lighting design vignettes, etc.
- **Guidance** such as model lease agreements and plug load reduction strategies
- Performance and technology **specifications** to expedite uptake of currently available, best in class equipment that is underutilized

Sample CBEA Specification Projects

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- **Lighting**: Applied in 800 CBEA facilities for 57,289,755+ kWh of savings
  - LED Site (Parking Lot): updated 2/15/12
  - High-Efficiency Parking Structure Lighting: updated 2/15/12
  - High Efficiency 2'x2', 2'x4', and 1'x4'Troffers: released 2/15/12
  - LED Refrigerated Display Case: released 2010
- **Refrigeration and Food Service**
  - Supermarket Refrigeration Commissioning: release by mid-2012
  - TBD specification: release by mid-2012
- **Plug and Process Loads**
  - Fume Hoods: release by mid-2012
  - Dry Type Low Voltage Distribution Transformers: release by mid-2012
  - Low temperature lab freezers: release by mid-2012
- **Space Conditioning**
  - Heat Pump Water Heater: release by mid-2012
  - High Performance RTU Challenge…

www.commercialbuildings.energy.gov/technologies

Commercial Buildings Resource Database:
www.commercialbuildings.energy.gov/resources

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Topic

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- [ ] Indoor Air Quality
- [ ] Lighting
- [ ] Miscellaneous Electric Loads
- [ ] Operations & Maintenance
- [ ] Refrigeration
- [ ] Renewable Energy
- [ ] Sensors & Controls
- [ ] Social & Behavioral Impacts
- [ ] Whole Building Design

Institutions

Building Type

Information Type

Audience

Phases of Delivery

Resource Search Results

Your search resulted in 26 resources.

Currently searching on: **Topic(s):** Building Analysis, Performance, & Monitoring;

Name	Building Type	Topic	Audience
A Guide to Building Commissioning	All	Building Analysis, Performance, and Monitoring; Commercial Building Partnerships; Energy Efficiency; Global Superior Energy Performance; Heating, Ventilation, and Air Conditioning; Indoor Air Quality; Lighting; Miscellaneous Electric Loads; Operations and Maintenance; Sensors and Controls; Whole Building Design; Envelope	All
A Guide to Energy Audits	All	Building Analysis, Performance, and Monitoring; Commercial Building Partnerships; Daylighting; Energy Efficiency; Energy Management Systems; Financial; Global Superior Energy Performance; Heating, Ventilation, and Air Conditioning; Indoor Air Quality; Lighting; Miscellaneous Electric Loads; Operations and Maintenance; Refrigeration; Sensors and Controls; Social and Behavioral Impacts; Whole Building Design; Renewable Energy; Envelope	All
A Guide to Performance Contracting with ESCOs	All	Building Analysis, Performance, and Monitoring; Commercial	Owners; Financiers and Marketers; Architects, Engineers, and

CBEA High Performance RTU Challenge

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- Design spec for a technically feasible, yet currently unavailable high performance (>18 IEER) RTU:
  - Reduce energy use up to 60% over standard equipment
  - $1 billion annual energy savings if all 10-20 ton units in U.S. were replaced
- 1/2011: CBEA issues the spec as a challenge to manufacturers, with their massive pool of potential purchases as the 'carrot'
- Key elements:
  - High performance requirement addresses part-load operation
  - Fault detection requirements help ensure performance is maintained over the life of the equipment
  - Lifecycle cost comparison calculator tool developed to aid building owners with purchasing decisions
  - DOE-developed test plan and performance evaluation to verify results
  - Letter of support by CBEA members as a demand signal

CBEA Members That Jointly Issued the RTU Challenge – What about the Federal Sector?

Draft RTU Challenge Testing and Demonstration Schedule

- Revised specification posted: 3/16
- Window for new RTU entries closes: 3/26
- Test plans finalized, initial RTU testing begins: 4/2
- Test results used to determine if the unit satisfies the RTU Challenge. If so, generate detailed impact assessments of the unit in CBEA buildings, results to members: 5/2
- Select CBEA member **and Federal** facility for demonstrating a specification-compliant RTU: ASAP
- Announce testing results, member purchases and upcoming demonstrations at the CBEA Efficiency Forum: 5/24
- Field demo of RTU Challenge unit begins: 6/1
- Updates on Federal participation at GovEnergy: 8/20
- Track and report on the performance and non-performance results from all CBEA installations of the RTUs: ongoing

McQuay International
a member of DAIKIN group

Carrier
A United Technologies Company

Proposed RTU Challenge Demonstration in a Federal Facility

- **What will DOE provide for the federal facility demonstration?**
  - FEMP will facilitate the acquisition of the RTU
  - Technical assistance with life cycle cost analysis and site selection
  - Technical assistance with installation of the RTU
  - Instrumentation (including req. equipment) of demo site and performance monitoring
  - Capture non-performance information (weight, noise, O&M issues, etc.)
  - Summary report and how-to guidance based on lessons learned
  - Contribute to PR and outreach if purchases result from the demonstration

Proposed RTU Challenge Demonstration in a Federal Facility

- **Which federal facility is an ideal candidate for demonstrating the RTU?**
  - Sufficient site-specific energy consumption data for pre / post evaluation
  - Satisfactory life-cycle cost assessment
  - Ability to participate according to the proposed timeframe
  - Availability of requisite staff and commitment by decision-making authority
  - Significant number of RTU's in the portfolio that are viable for replacement
  - Likelihood to purchase spec-compliant RTUs if participant expectations are met
  - Willingness to share results so DOE can facilitate adoption by a wider audience

Thank you!

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www.commercialbuildings.energy.gov